HIGH STRENGTH PRESTRESSED CONCRETE MEMBERS (8-21-00)

~~Prestressed concrete members with specified concrete strengths greater than 6000 psi shall meet the requirements of Section 1078 of the Standard Specifications, with the following exceptions:~~

1.0 MATERIALS

The coarse aggregate shall have ~~a Los Angeles abrasion loss of not more than 40% and~~ a sodium sulfate soundness loss at five cycles of not more than 8%.

1014-2(B)

~~Portland cement shall be pretested and come from a single source. Strength uniformity of the cement shall be certified by the manufacturer in accordance with ASTM C917. The certification shall be submitted to the Engineer with the Contractor's proposed mix design.~~

1024-1 already

2.0 PORTLAND CEMENT COMPOSITION AND DESIGN

1078-4(A)

~~All concrete shall develop the minimum compressive strength shown on the plans at the age of 28 days.~~ Concrete shall be air entrained to provide an air content of ~~4 ± 1%~~5 + 2%. Concrete shall have a maximum slump of 3½ inches before the addition of high range water reducer and ~~6~~ 7 inches with high range water reducer. The maximum water-cementitious material ratio shall not exceed 0.40. ~~Fly ash,~~ microsilica ~~and ground granulated blast furnace slag, or their combinations may be used as part of the cementitious material at a rate consistent with industry practice and with the approval of the Engineer.~~ High range water reducer shall be used at a rate not to exceed the manufacturer's recommended dosage.

1078-2 & 1078-4(A)

1078-4(A)

Laboratory test results of at least six 4" x 8" cylinders at 28 days shall accompany Form 312. The cylinders shall have been made in ~~steel molds~~. The average strength based on test results of the six cylinders shall be not less than 1500 psi above the minimum strength required by the plans.

3.0 TESTING

~~For the purpose of testing for the required 28 day compressive strength and also for the required compressive strength for the transfer of load, the Contractor shall furnish, at no cost to the Department, a minimum of nine concrete cylinders made from a sample of concrete placed near the live end of the bed and a minimum of nine concrete cylinders made from a sample of concrete placed near the dead end of the bed.~~

Two cylinders from each end shall be tested to determine release strength. The strength of the two dead end cylinders will be averaged and the strength of the two live end cylinders will be averaged. Both of these averages shall meet or exceed the required release strength. No cylinder shall have a strength less than 200 psi below the required release strength.

1078-4(B)

Three cylinders from each end shall be tested to determine 28 day strength. The strength of the three dead end cylinders will be averaged and the strength of the three live end cylinders will be averaged. Both of these averages shall meet or exceed the required 28

day strength. ~~If the coefficient of variation of the 28 day cylinders exceeds 15%, the Engineer may require additional tests.~~

~~Cylinders shall be made in 4" x 8" steel molds in accordance with AASHTO T23, except that the cylinders shall be cured in the same manner as the members represented until the strands have been released. Cylinders shall be placed in clusters at random points along the casting bed. After the strands have been released, cylinders shall be air cured in an approved common area near the testing apparatus for the remainder of the 28 day curing period. Cylinders shall be tested in accordance with AASHTO T22 except that the neoprene caps may be used. Approved apparatus for testing the transfer strength of the cylinders shall be provided by the Contractor. This apparatus shall be maintained to within 1.0% accuracy and shall be calibrated at intervals not to exceed 12 months by an approved testing company at no cost to the Department. The Engineer reserves the right to require verification immediately after a testing machine is relocated and whenever there is reason to doubt the accuracy of the indicated load, regardless of the time interval since the last verification.~~

1078-4(B) already

4.0 MIXING

1078-4(I)(3)

If truck mixing is used, trucks shall be loaded to within at least 1 yd^3 of rated capacity, and concrete shall be mixed at a speed of 16 - 18 revolutions per minute.

5.0 BASIS OF PAYMENT

~~No separate payment will be made for high strength concrete. The cost of furnishing and incorporating the high strength concrete is considered a part of the work of fabricating and furnishing the prestressed concrete units.~~